



DARK ENERGY  
SURVEY

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# Results from the April CTIO-1m DECam 2k x 2k Observing Run: A Recap + New Some Stuff

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Darren DePoy  
Brenna Flaugher  
Sahar Allam  
Huan Lin



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# April Observing Run: Summary

Night	Date (UT)	Directory <sup>†</sup>	CCD	Conditions
night 1	10 April 2008	n1	DECam 2kx2k	clear
night 2	11 April 2008	----	DECam 2kx2k	no observations
night 3	12 April 2008	----	DECam 2kx2k	no observations
night 4	13 April 2008	*n3*	DECam 2kx2k	started with cirrus, then clear
night 5	14 April 2008	*n4*	DECam 2kx2k	clear
night 6	15 April 2008	*n5*	Y4KCam	clear
night 7	16 April 2008	*n6*	Y4KCam	cirrussy until after midnight, then clear

<sup>†</sup>Data are on des03.fnal.gov:/data/des03.a/data/dtucker/Data/DES/DECam2kx2k/



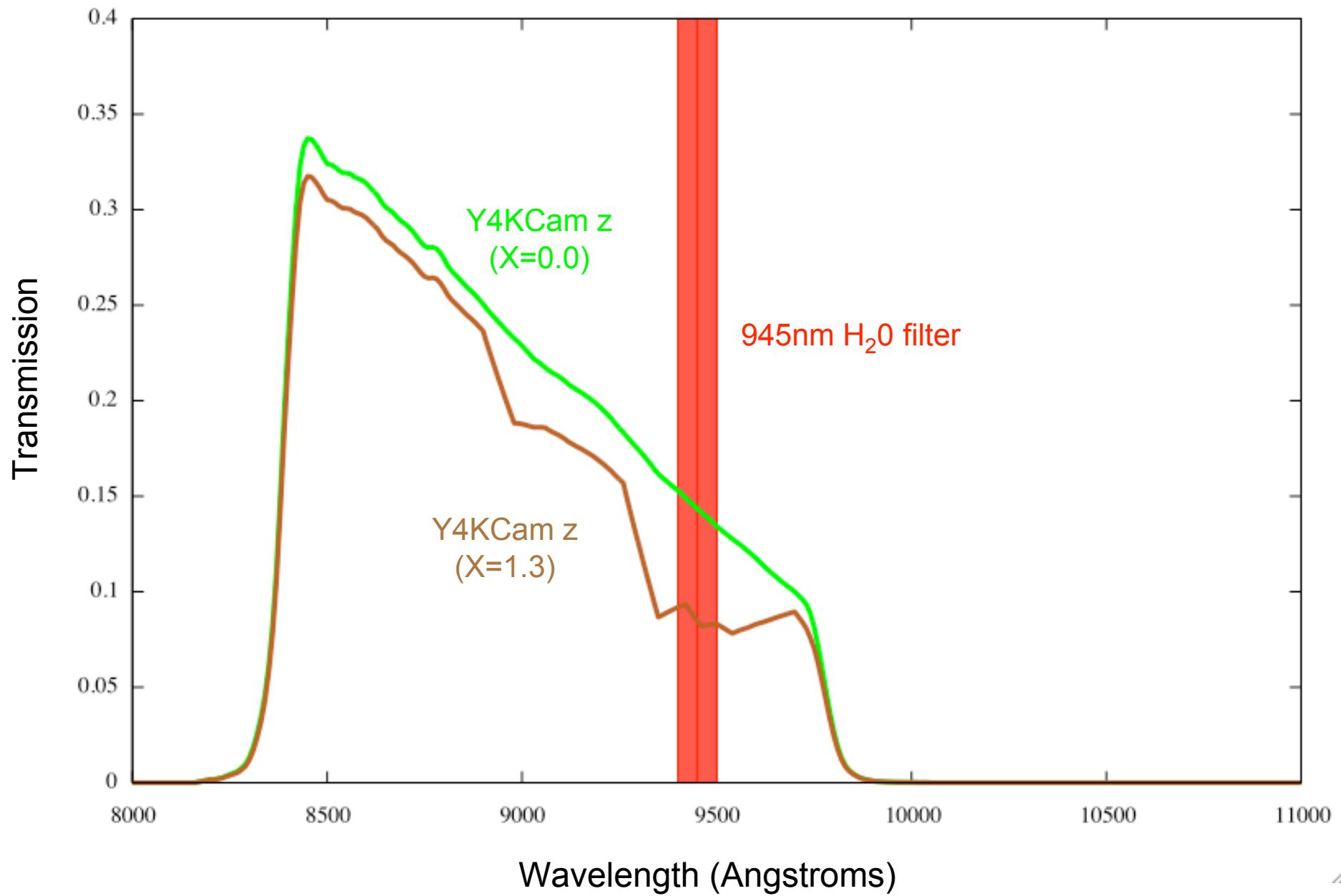
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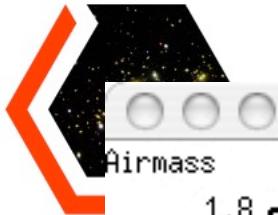
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<sup>†</sup>Data are on des03.fnal.gov:/data/des03.a/data/dtucker/Data/DES/DECam2kx2k/

## H<sub>2</sub>O Filter Tests (Y4KCam)

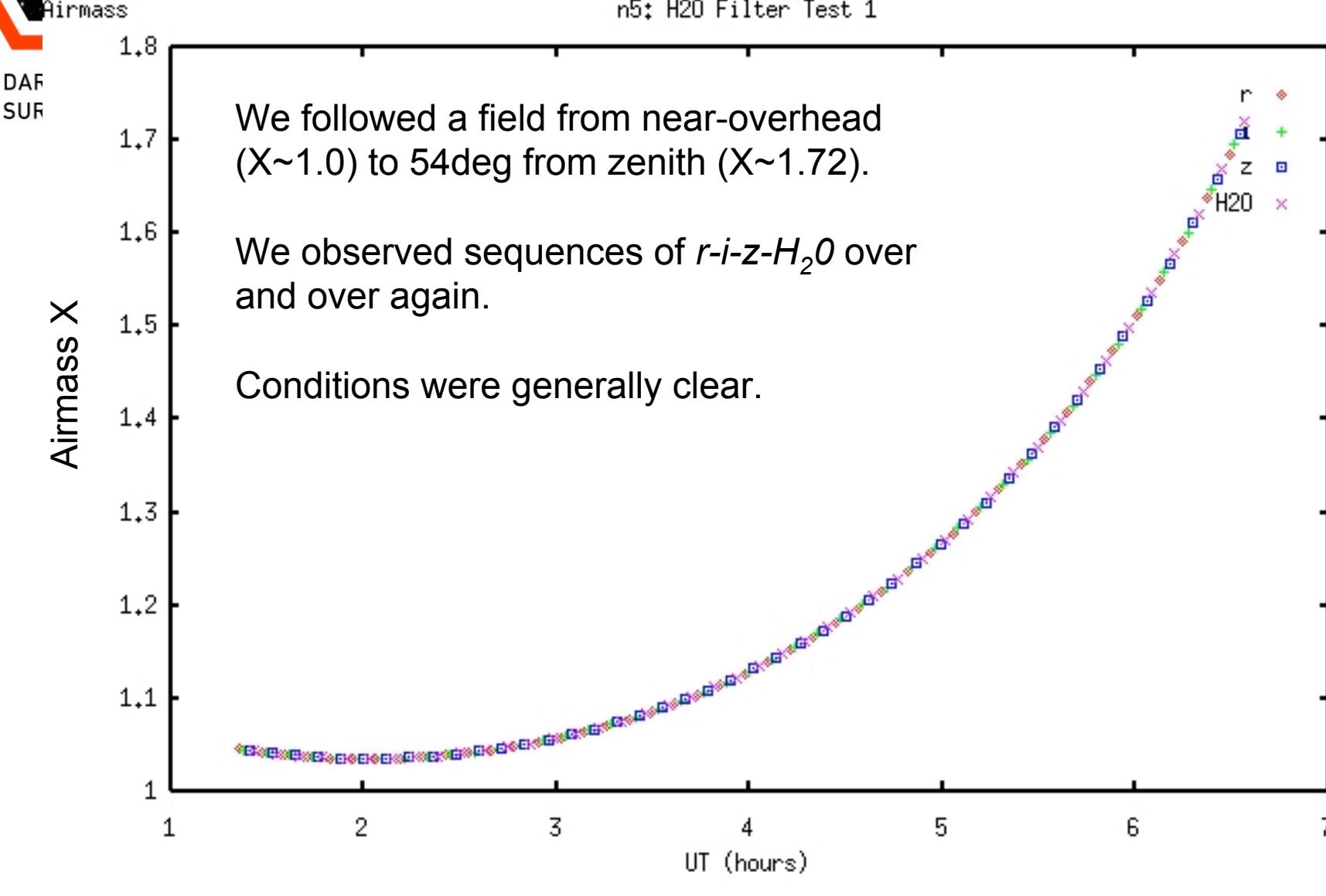




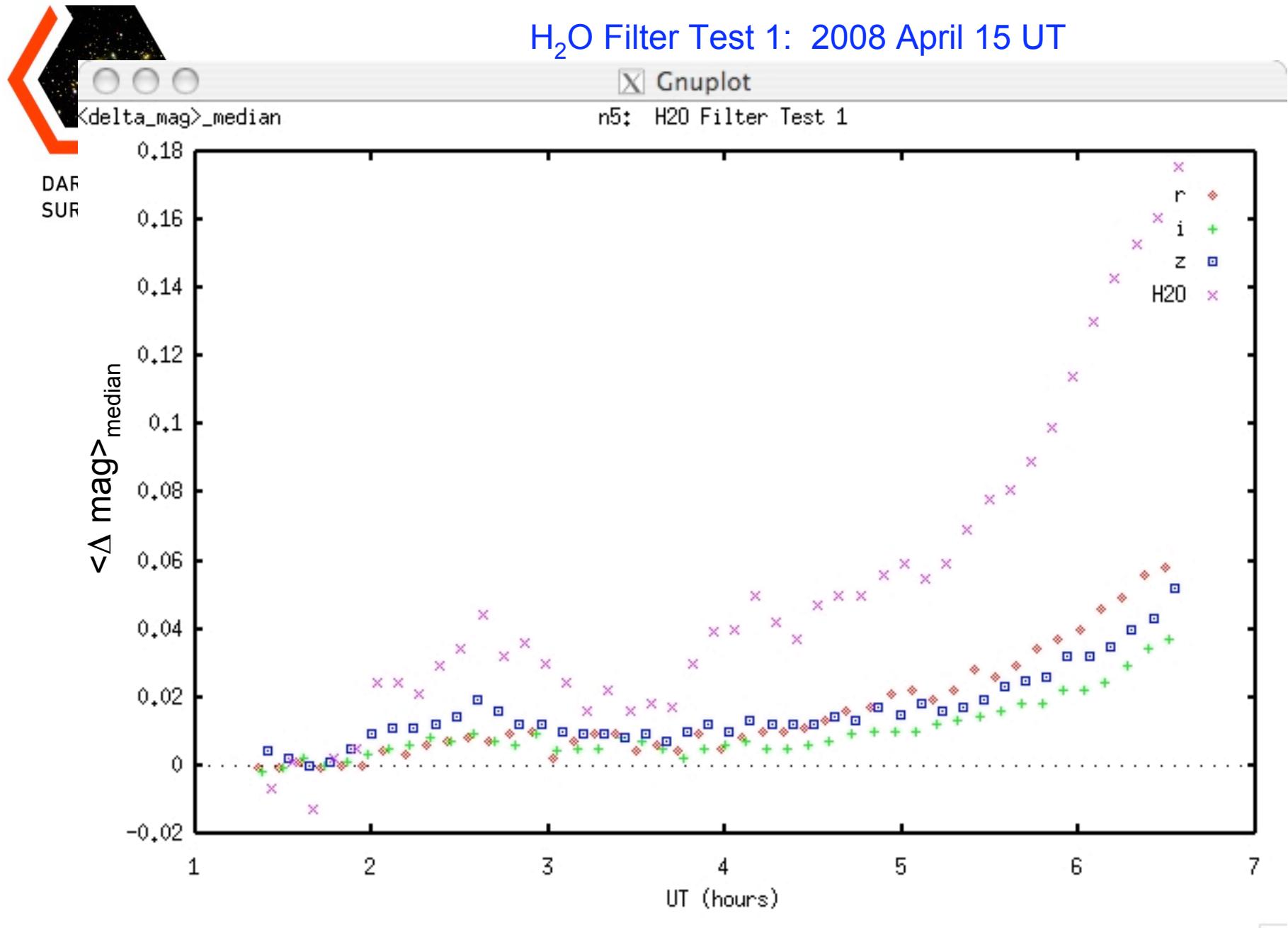
## H<sub>2</sub>O Filter Test 1: 2008 April 15 UT

X Gnuplot

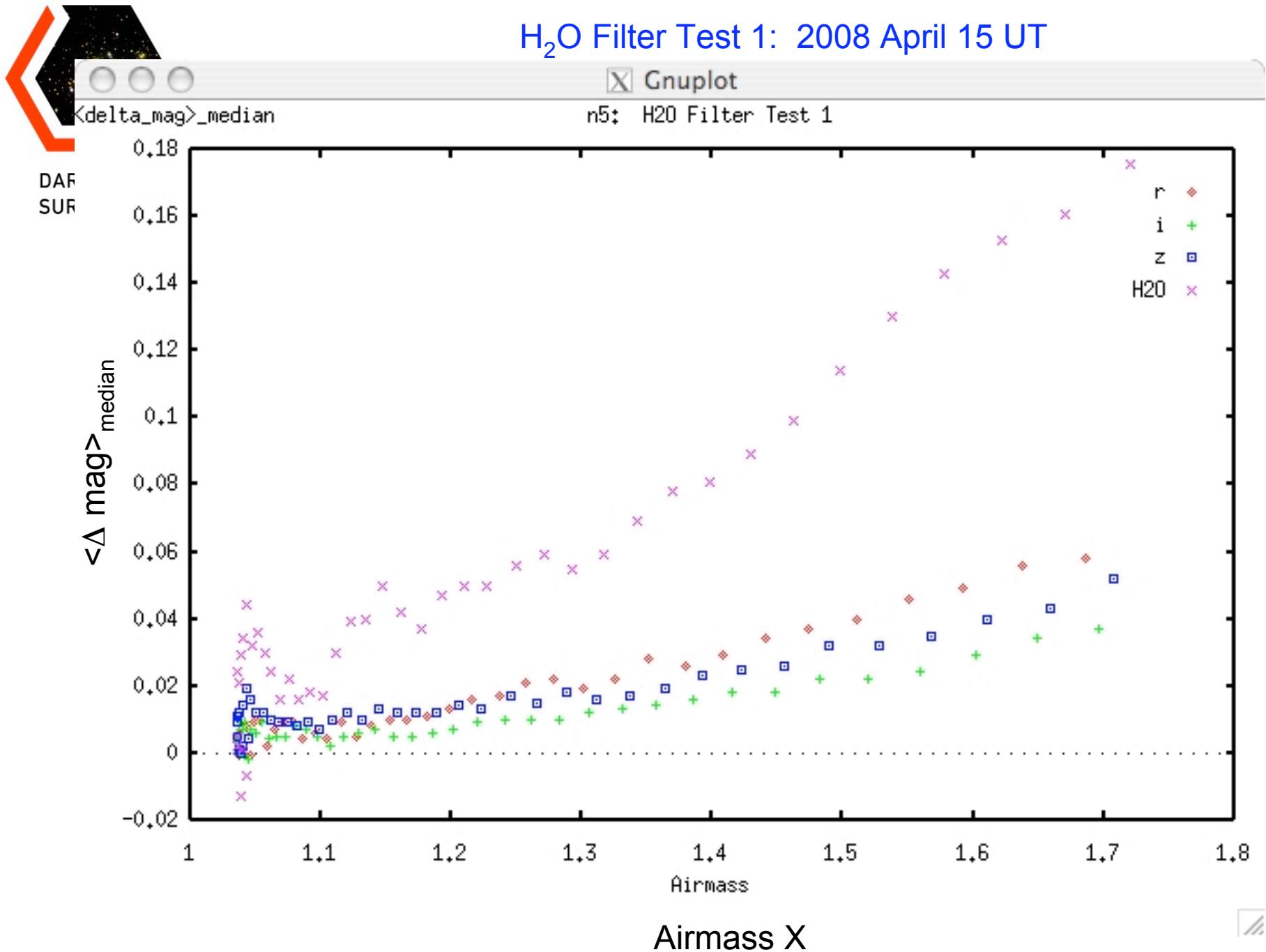
n5: H2O Filter Test 1



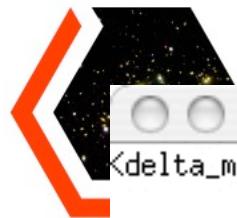
# H<sub>2</sub>O Filter Test 1: 2008 April 15 UT



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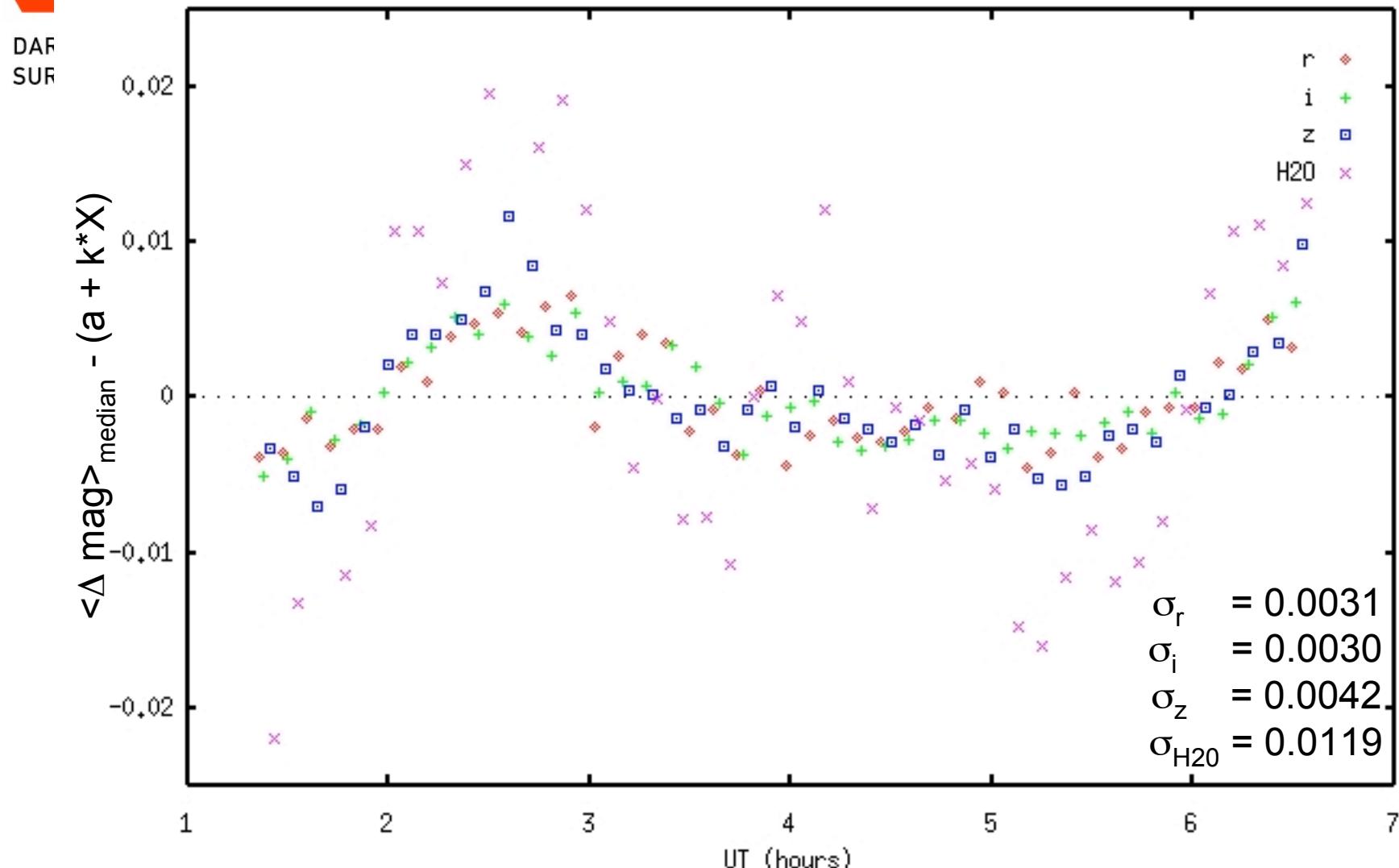
# H<sub>2</sub>O Filter Test 1: 2008 April 15 UT



X Gnuplot

<delta\_mag>\_median - (a + k\*X)

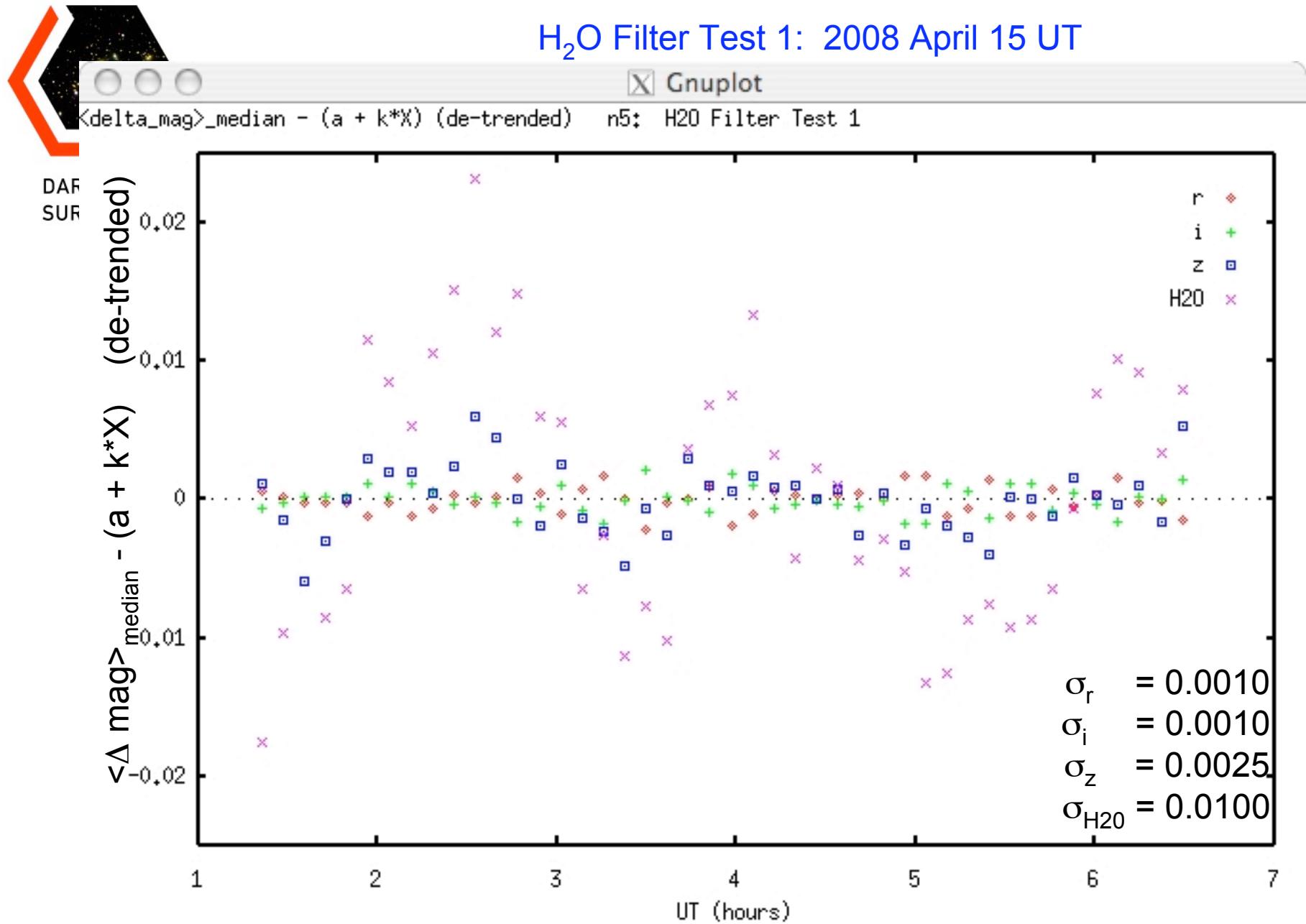
n5: H2O Filter Test 1



UT (hours)



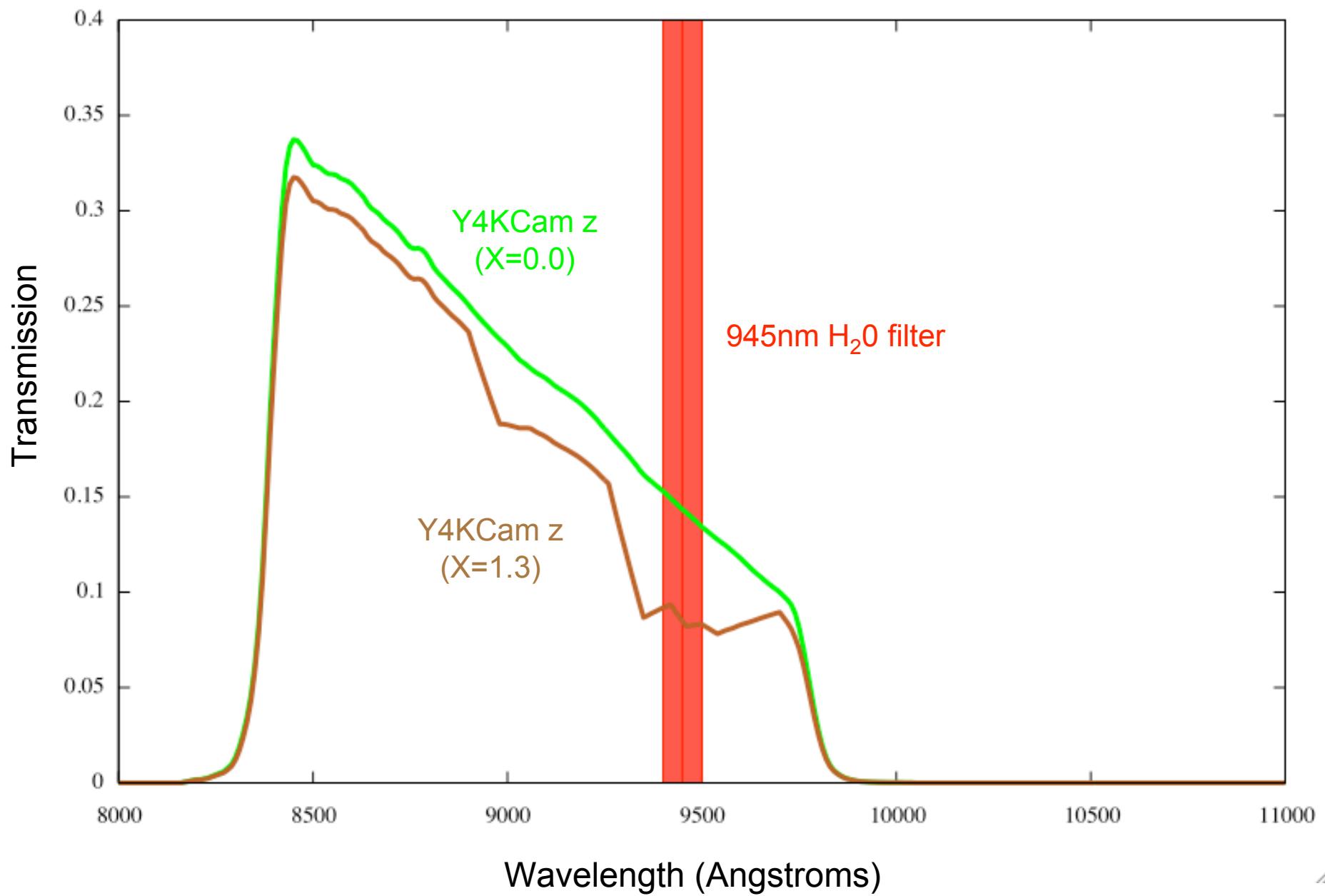
# H<sub>2</sub>O Filter Test 1: 2008 April 15 UT

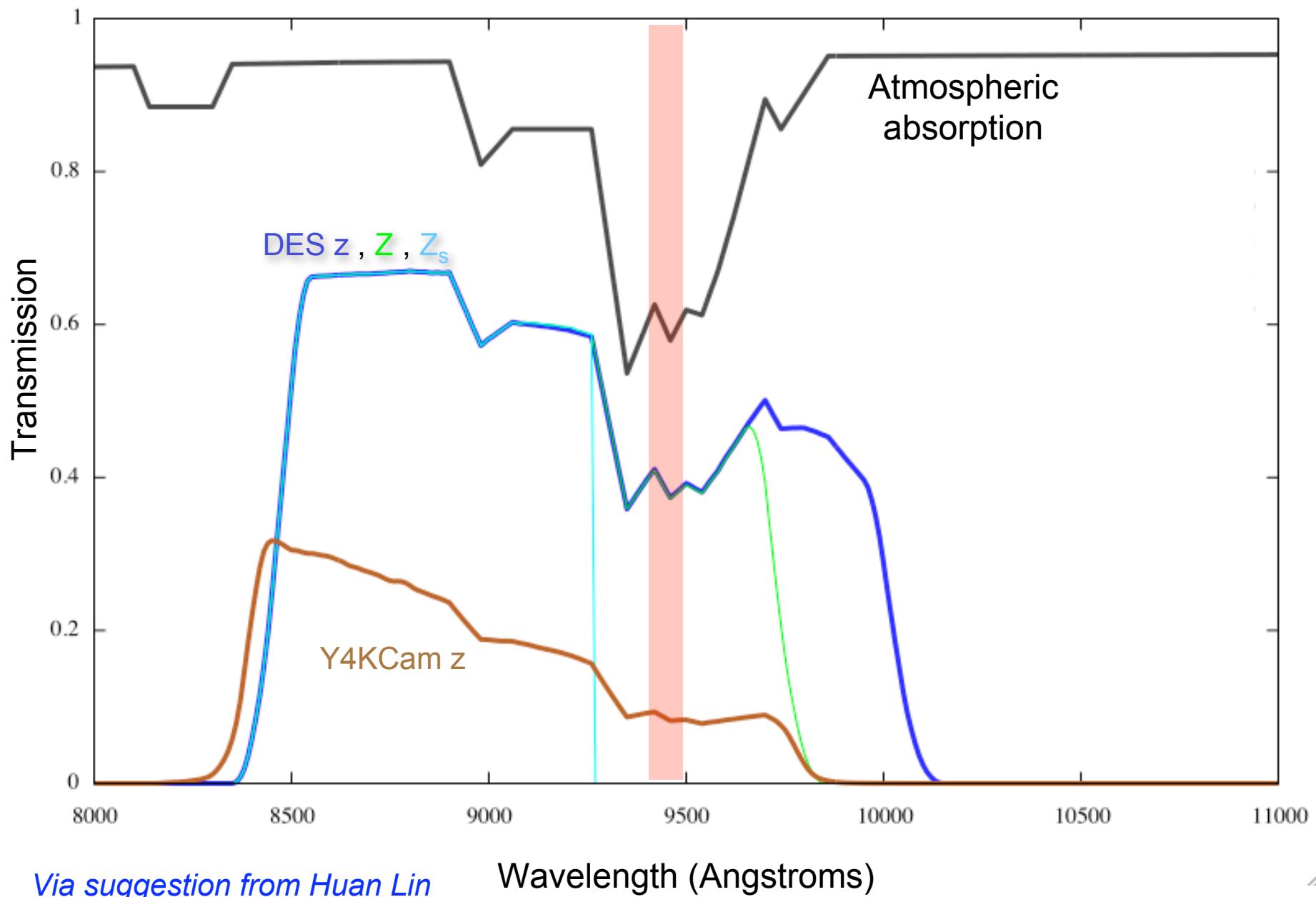


Via suggestion from David Burke

UT (hours)

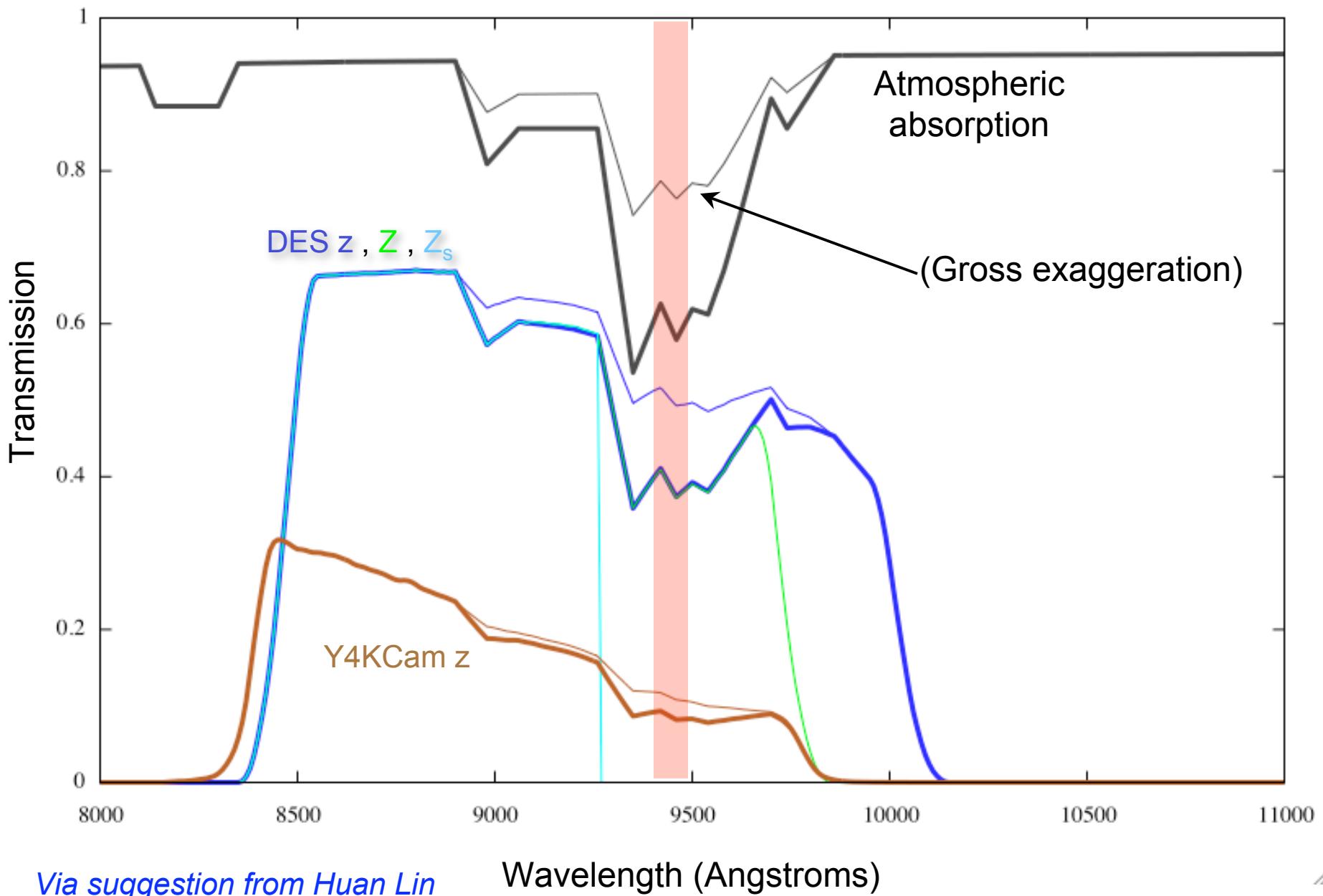
## H<sub>2</sub>O Filter Tests (Y4KCam)

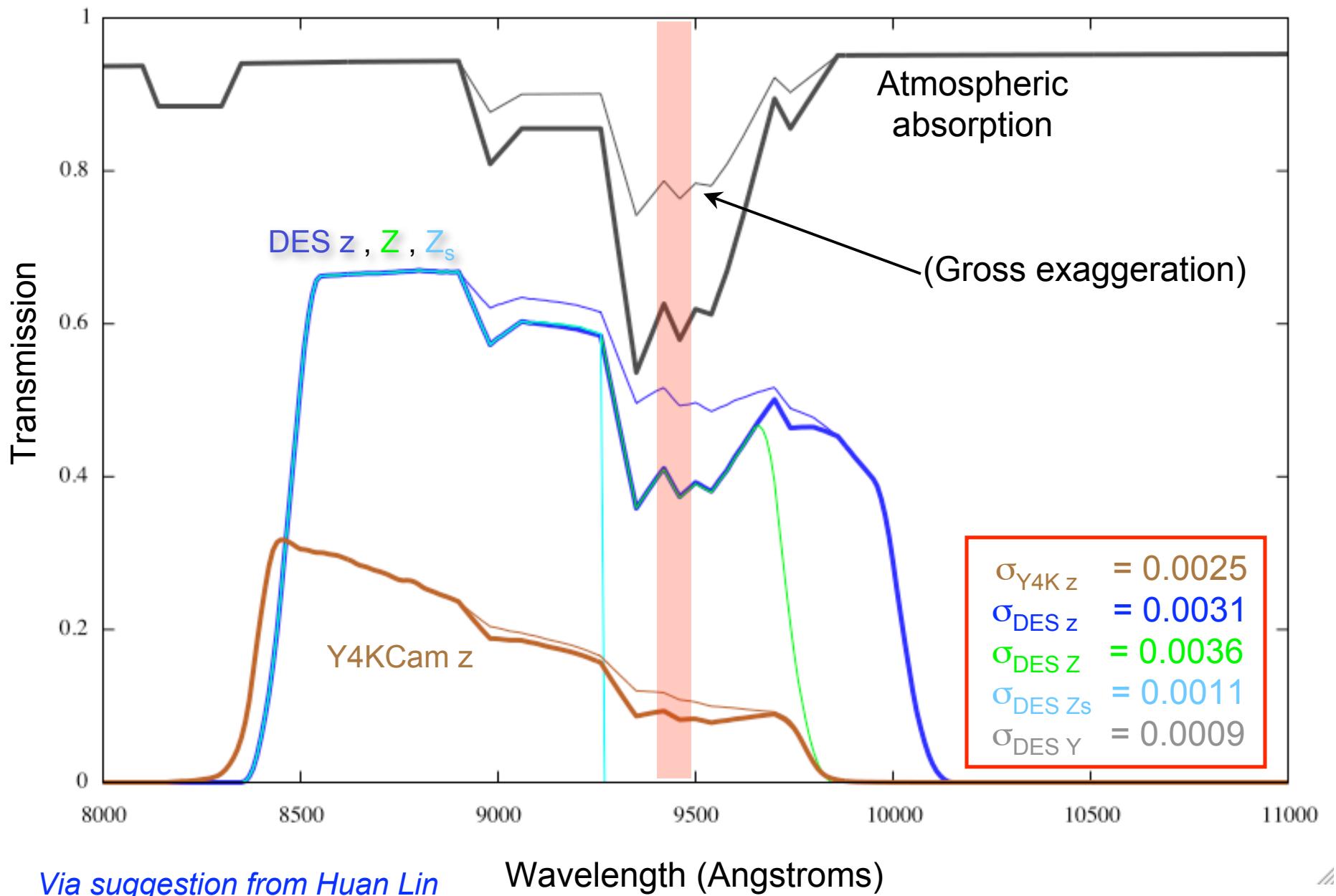




Via suggestion from Huan Lin

Wavelength (Angstroms)





Via suggestion from Huan Lin

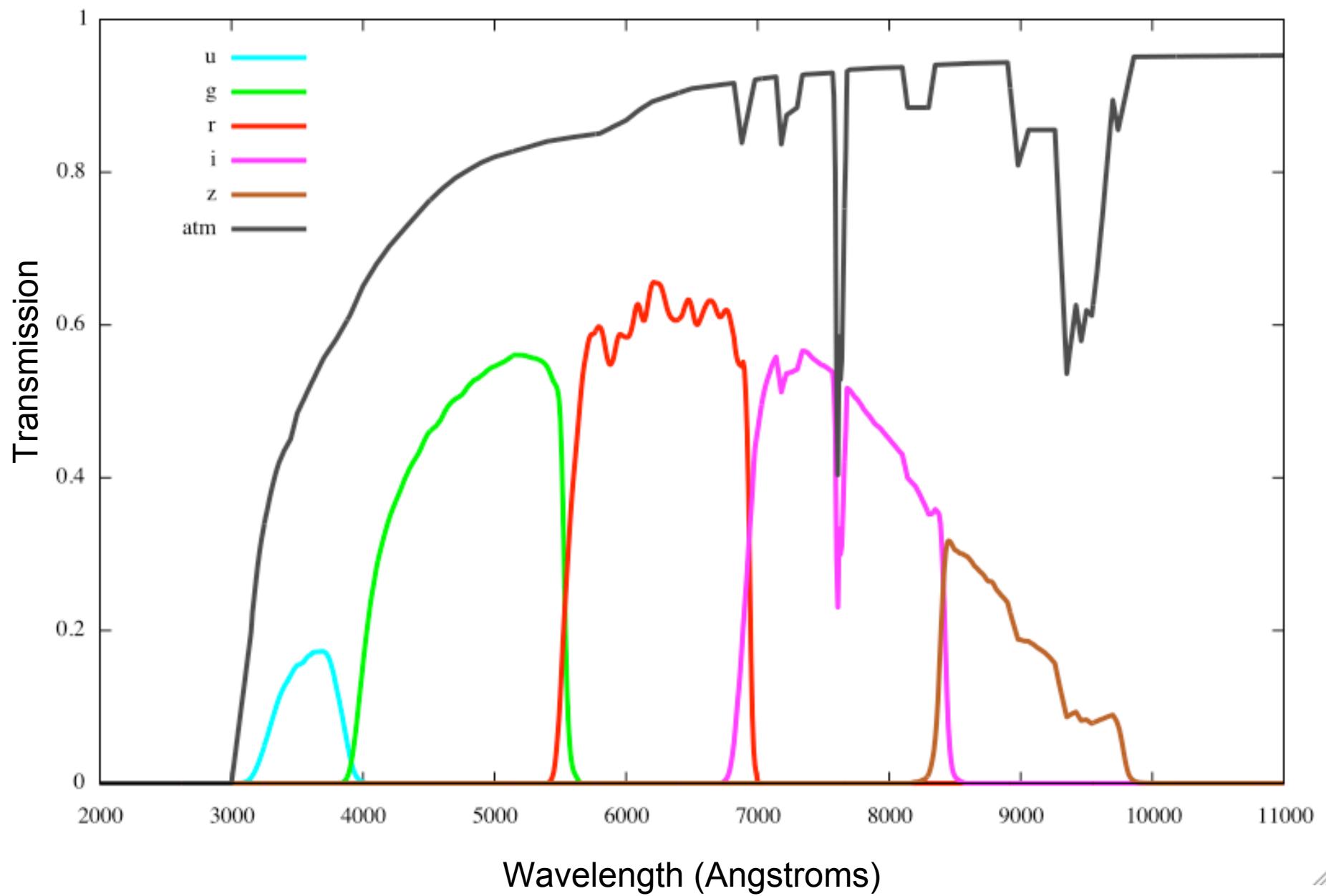
Wavelength (Angstroms)



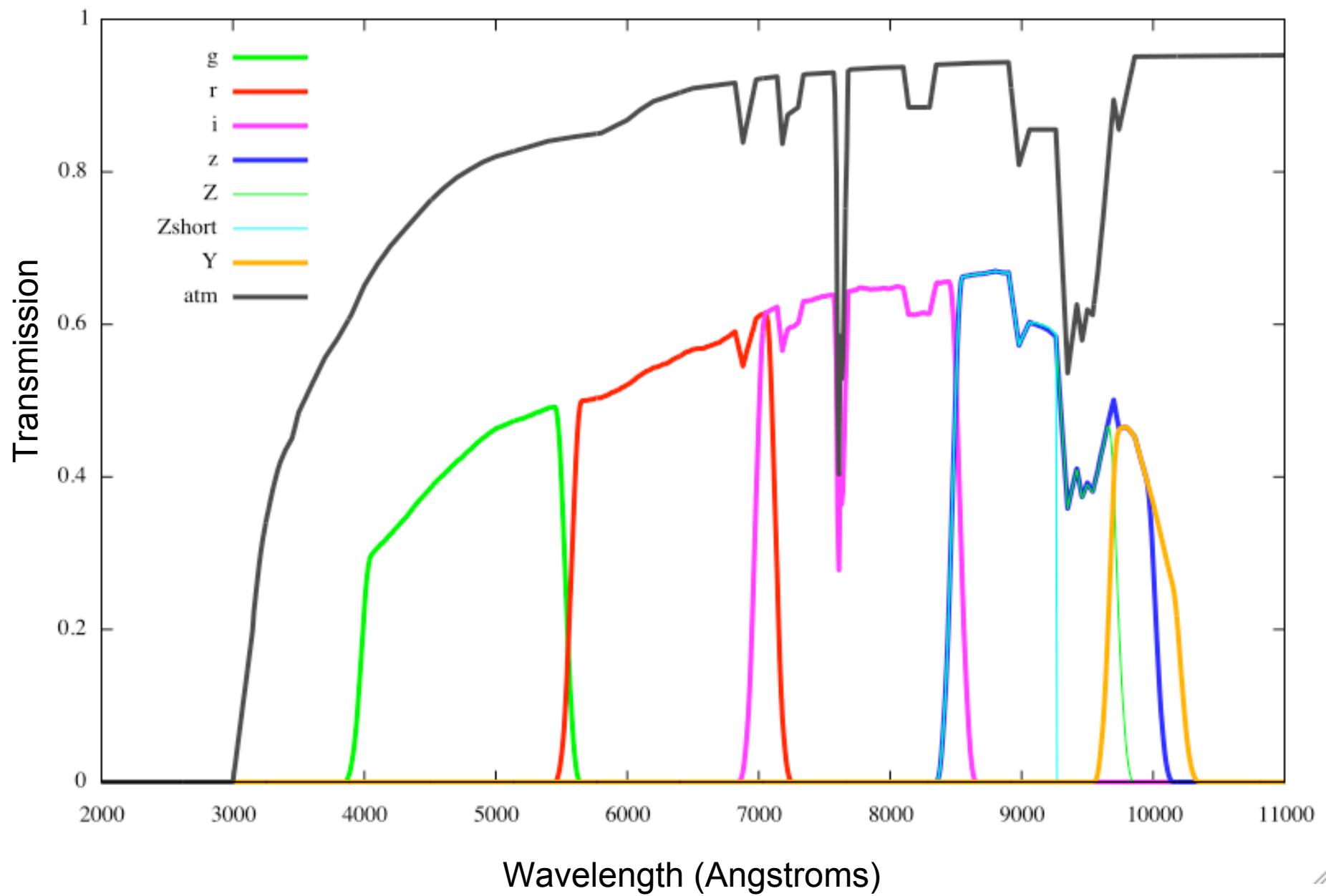
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# Extra Slides

## Y4KCam ugriz Total Throughput



## DES gri(z,Z,Z<sub>s</sub>)Y Total Throughput



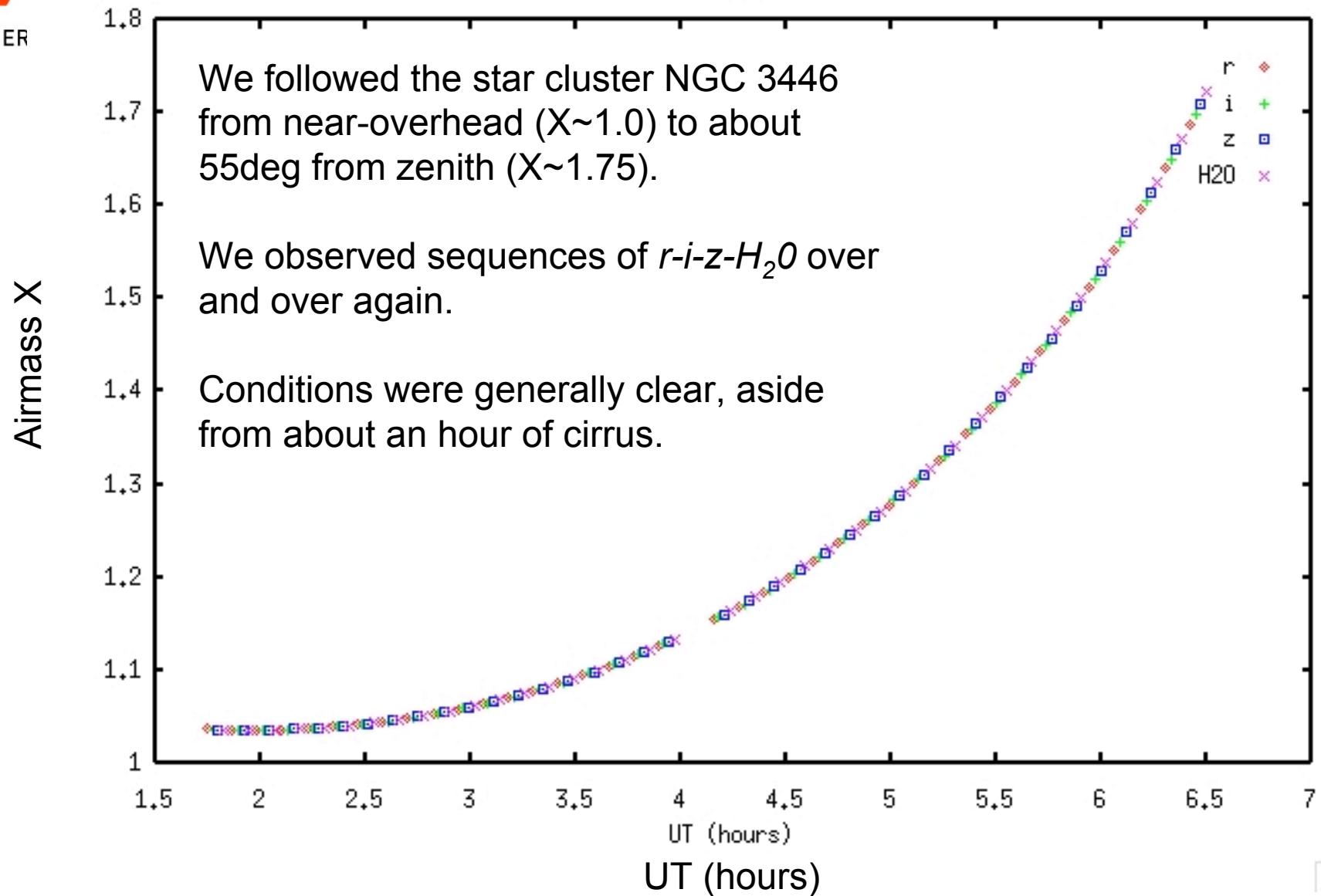


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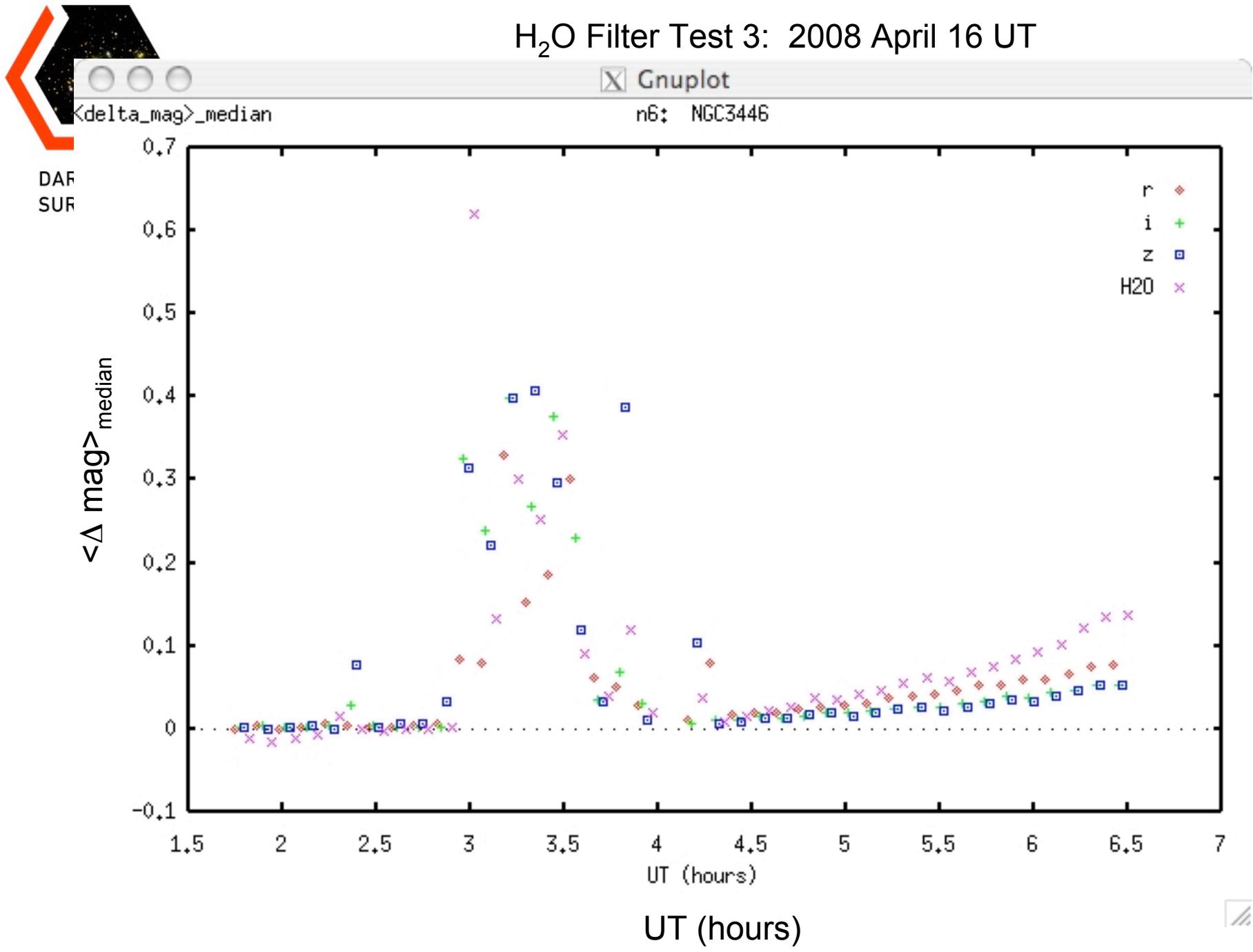
## H<sub>2</sub>O Filter Test 3: 2008 April 16 UT

Gnuplot

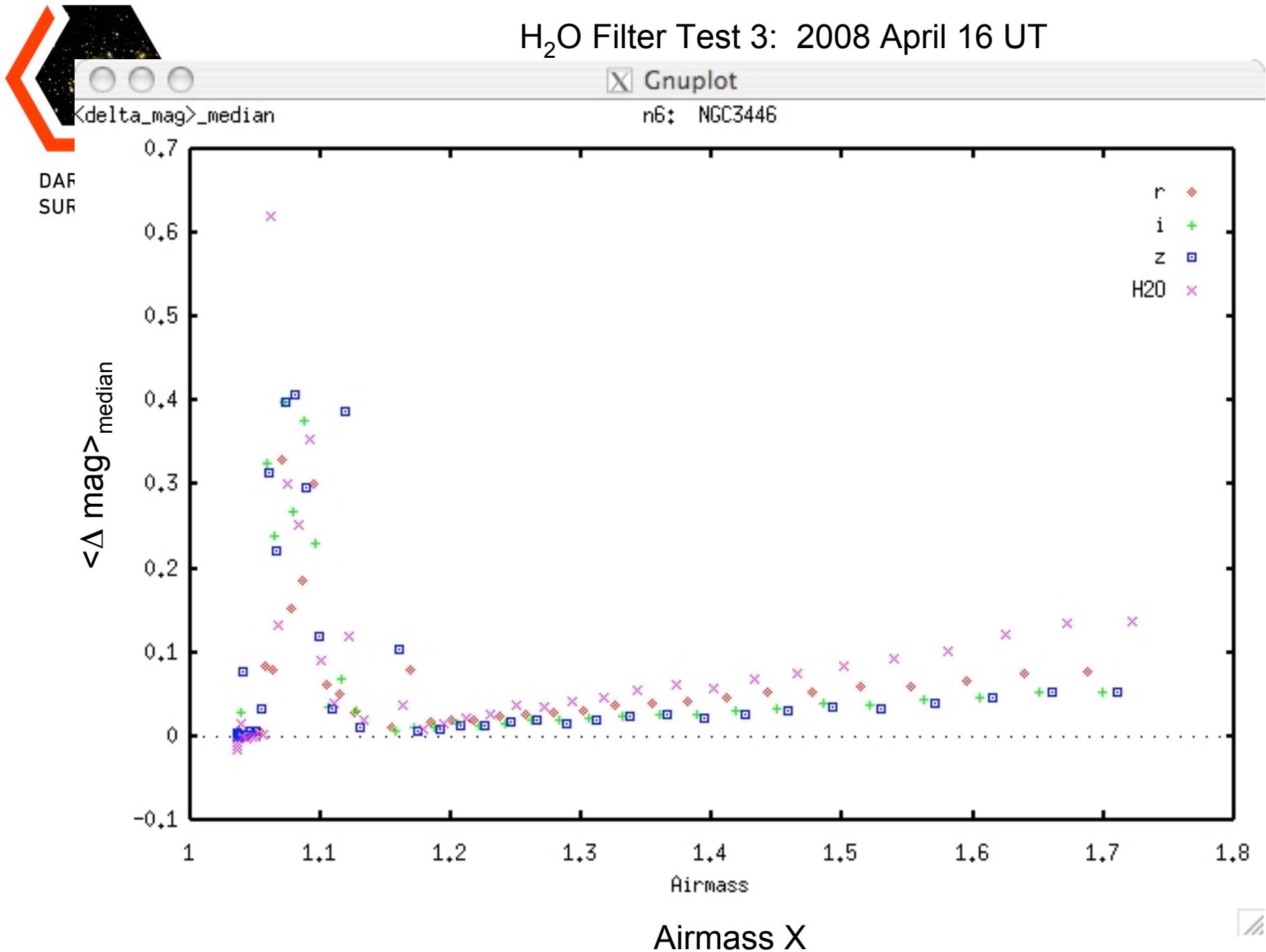
n6: NGC3446



# H<sub>2</sub>O Filter Test 3: 2008 April 16 UT



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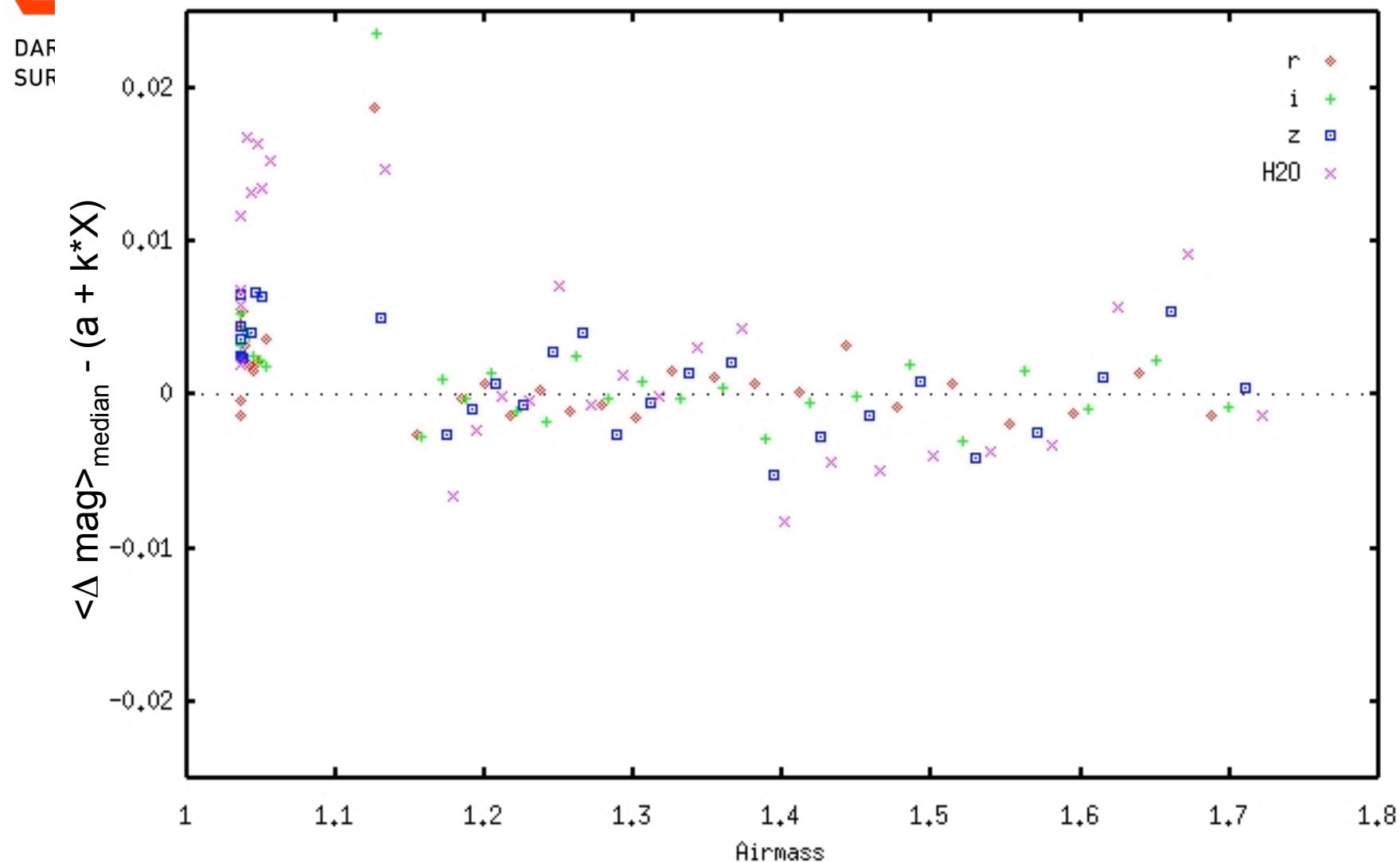


# H<sub>2</sub>O Filter Test 3: 2008 April 16 UT

X Gnuplot

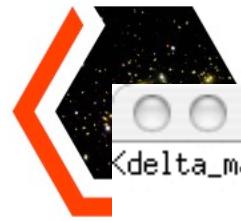
<delta\_mag>\_median - (a + k\*X)

n6: NGC3446



Airmass X

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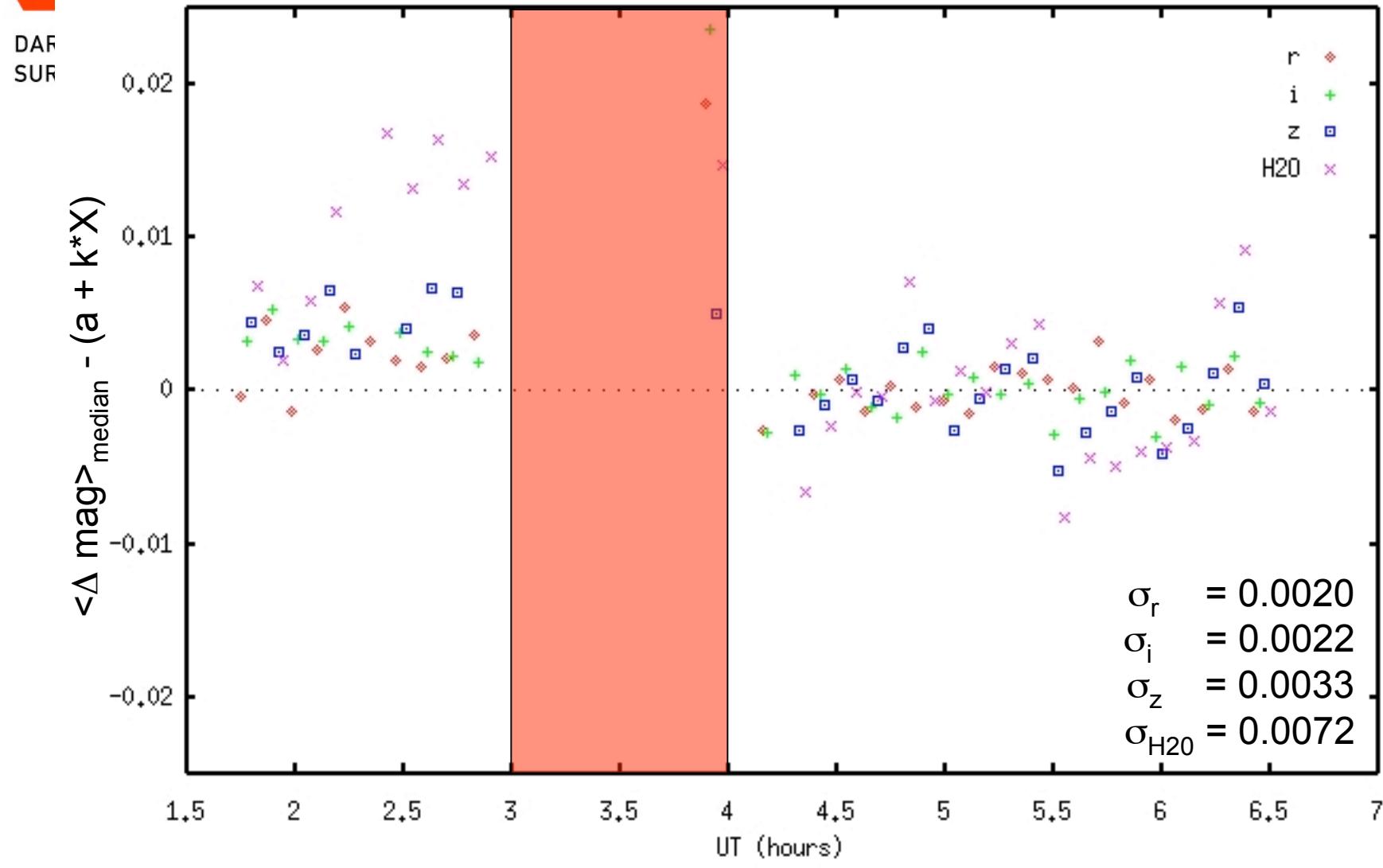


## H<sub>2</sub>O Filter Test 3: 2008 April 16 UT

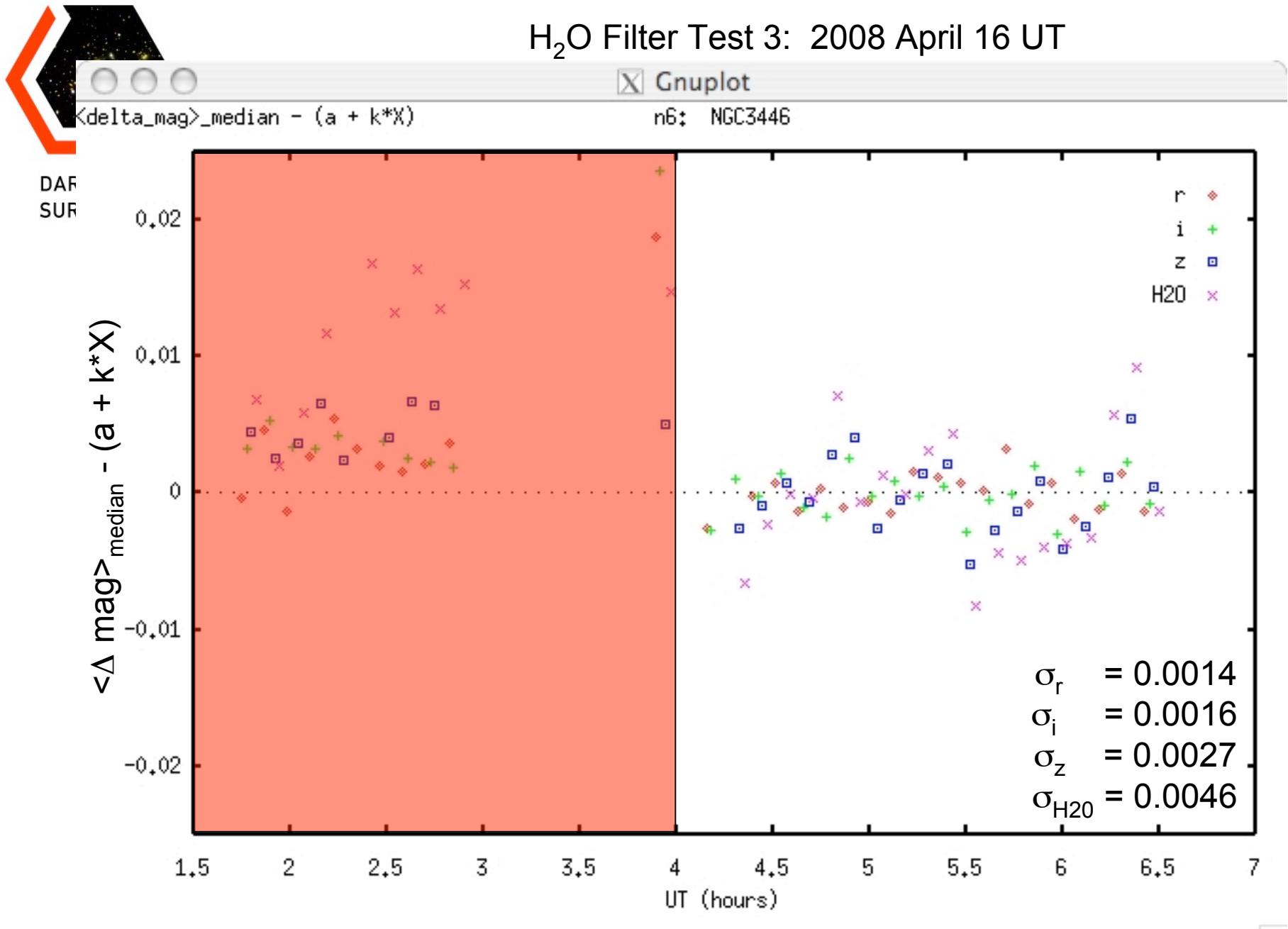
X Gnuplot

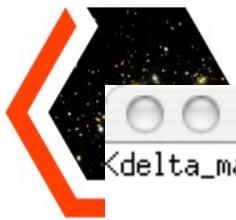
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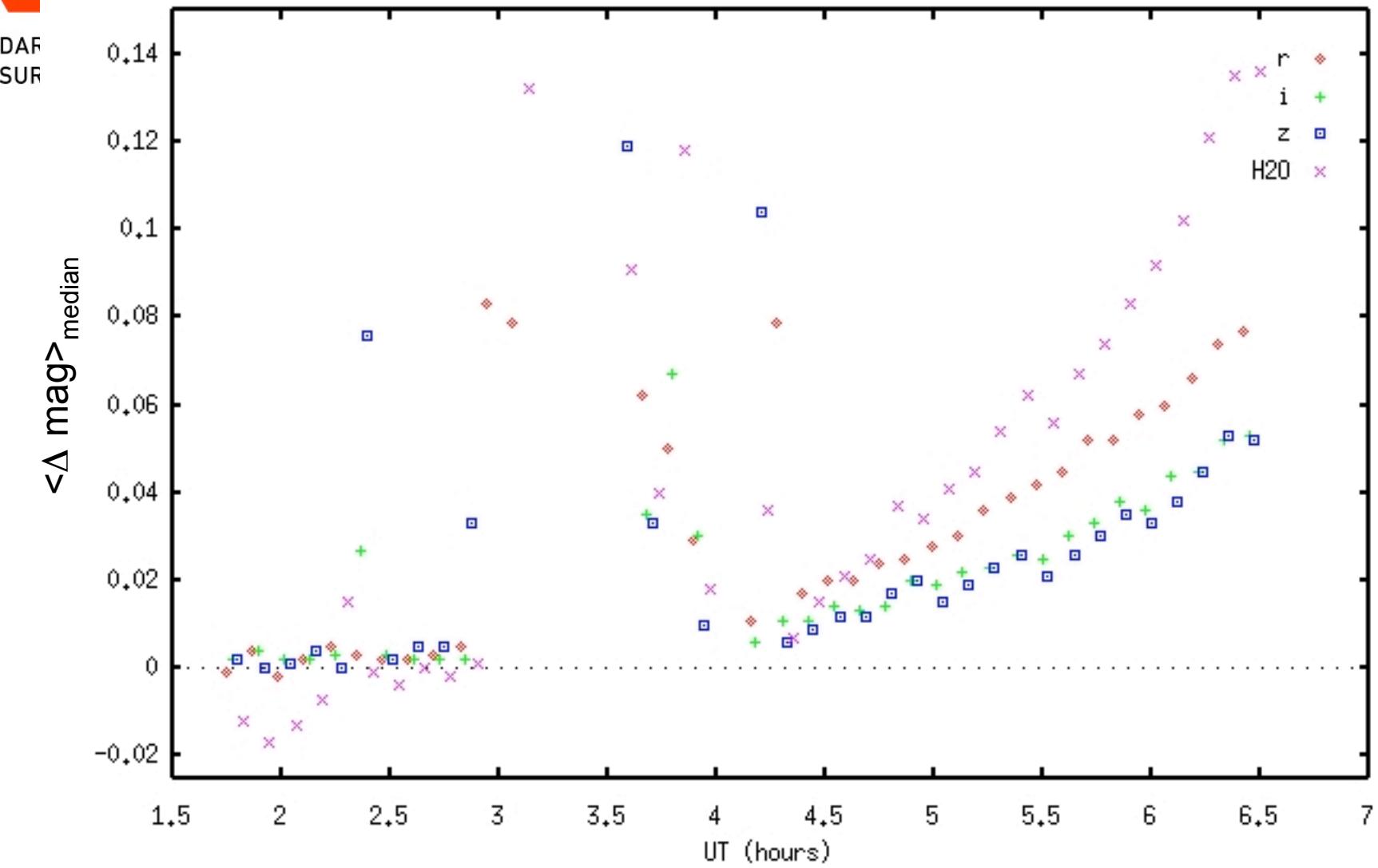


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X Gnuplot

n6: NGC3446

<delta\_mag>\_median

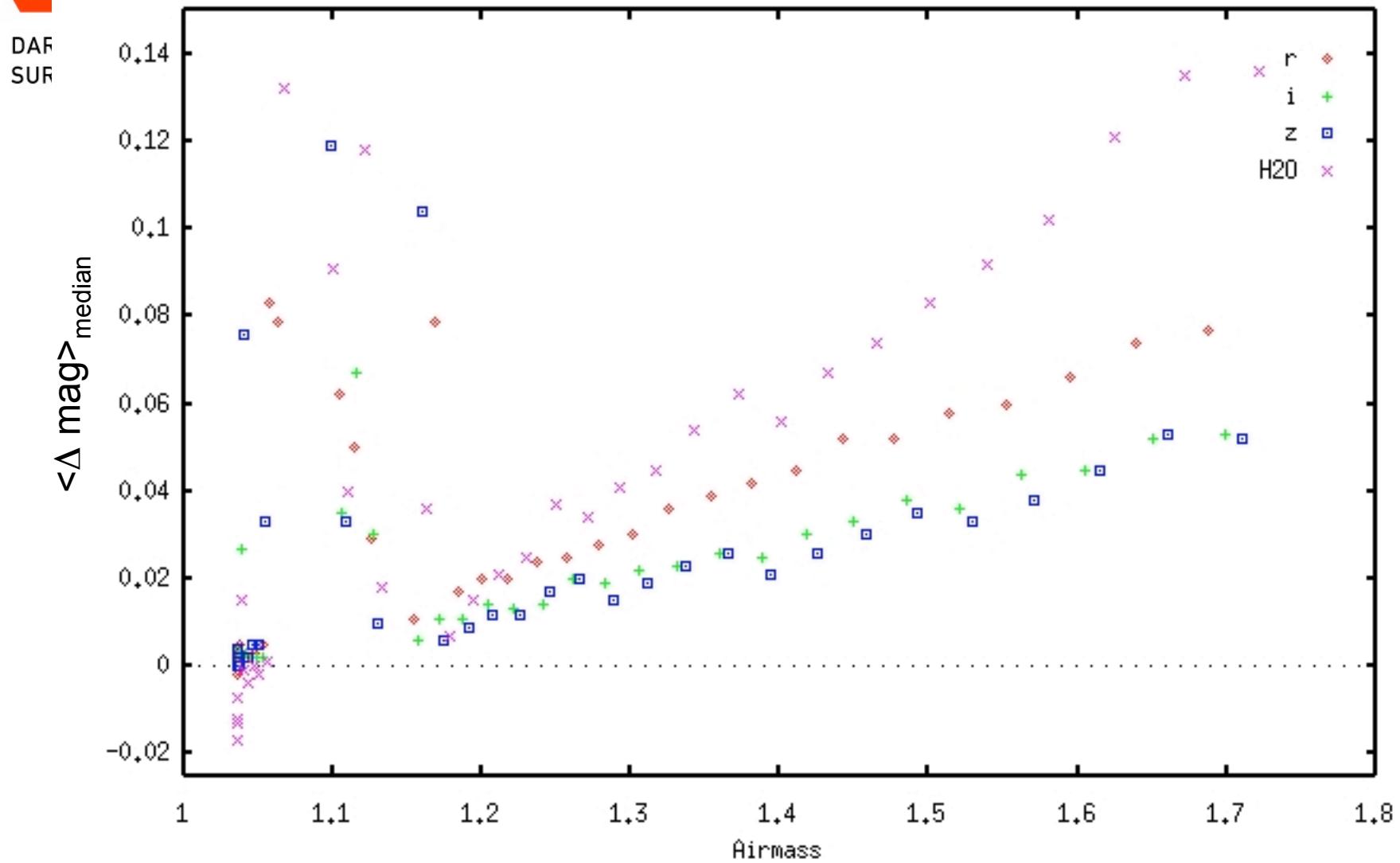


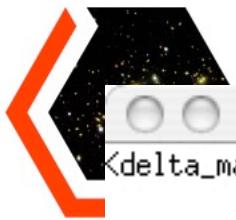
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X Gnuplot

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<delta\_mag>\_median



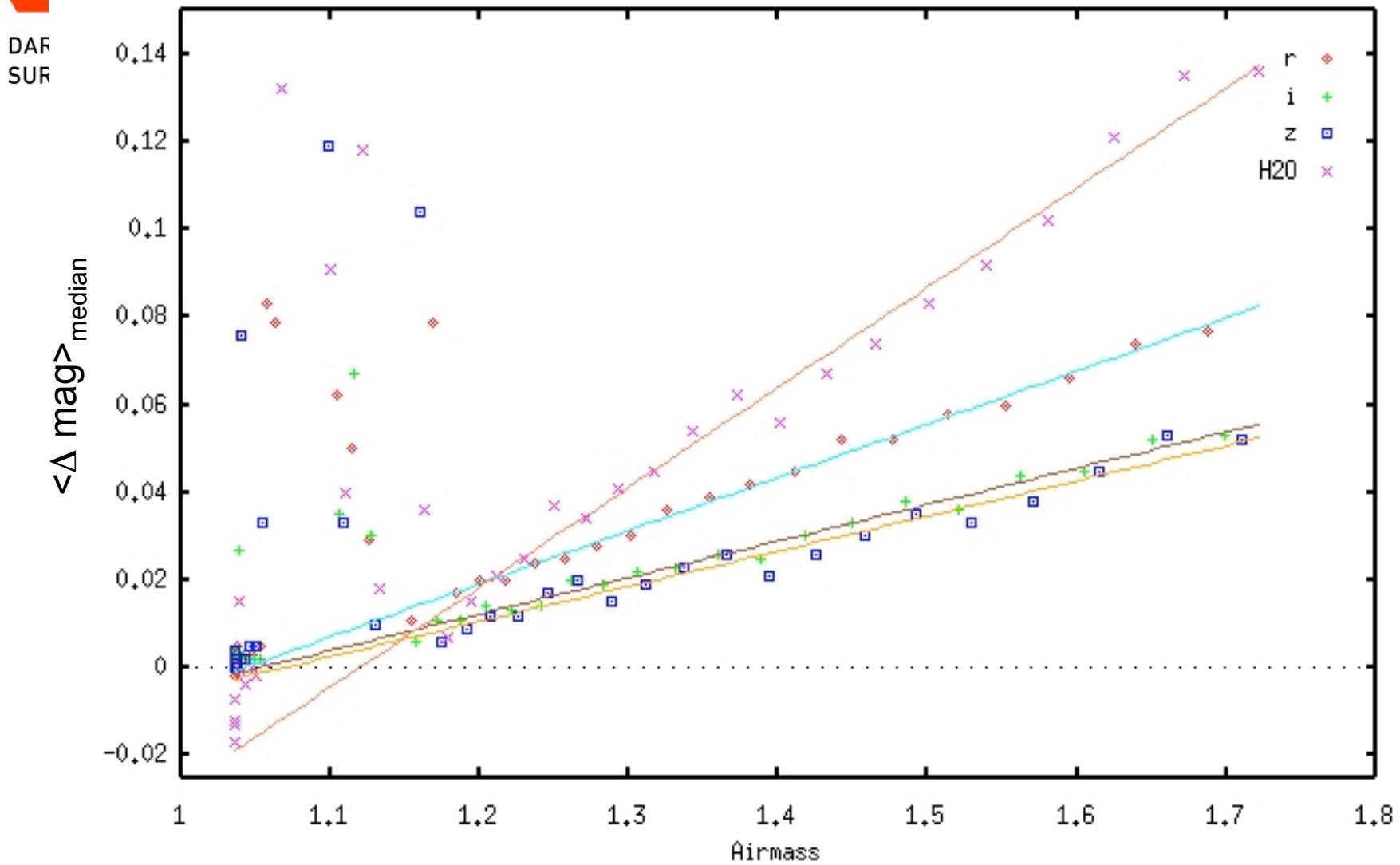


# H<sub>2</sub>O Filter Test 3: 2008 April 16 UT

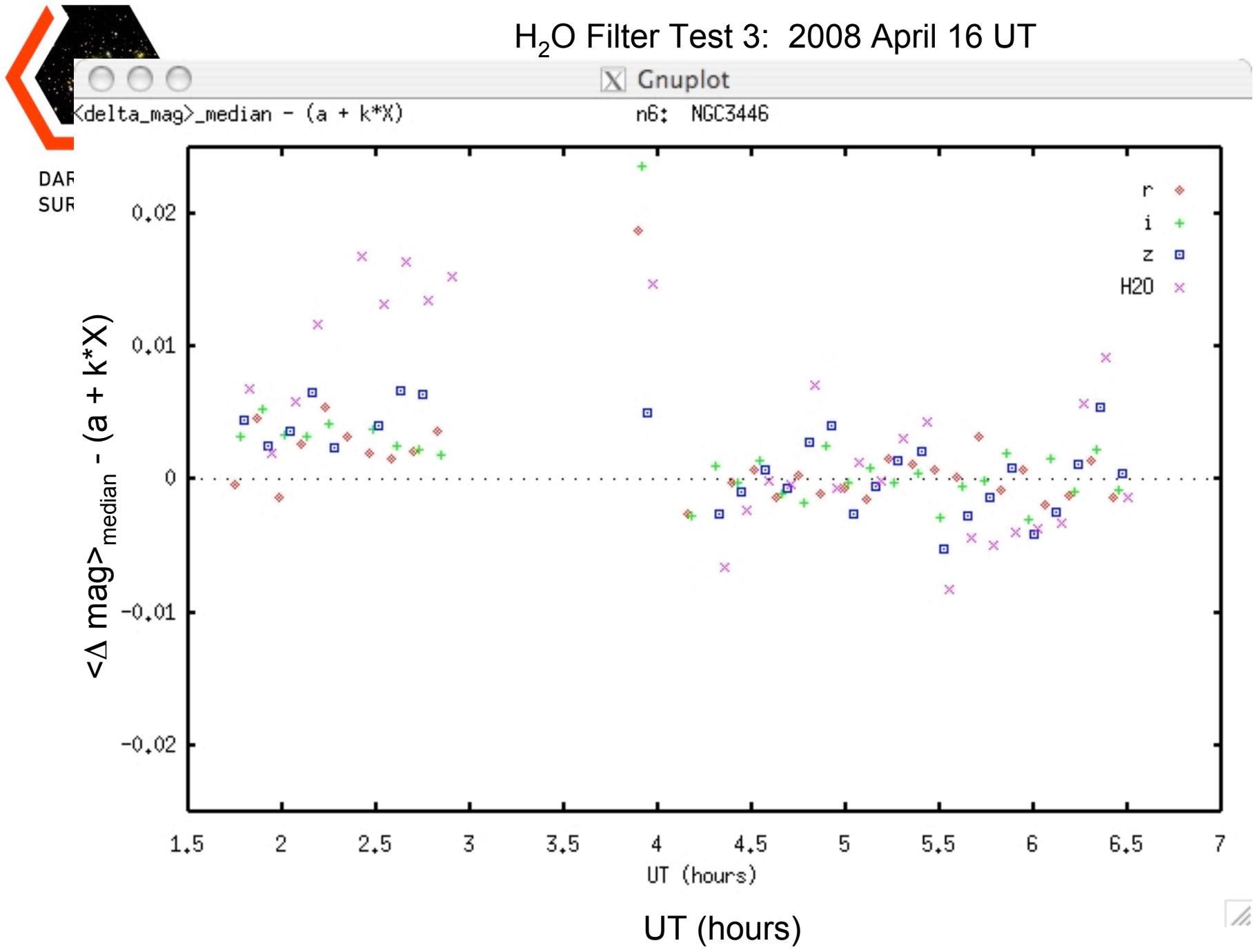
X Gnuplot

n6: NGC3446

<delta\_mag>\_median



# H<sub>2</sub>O Filter Test 3: 2008 April 16 UT

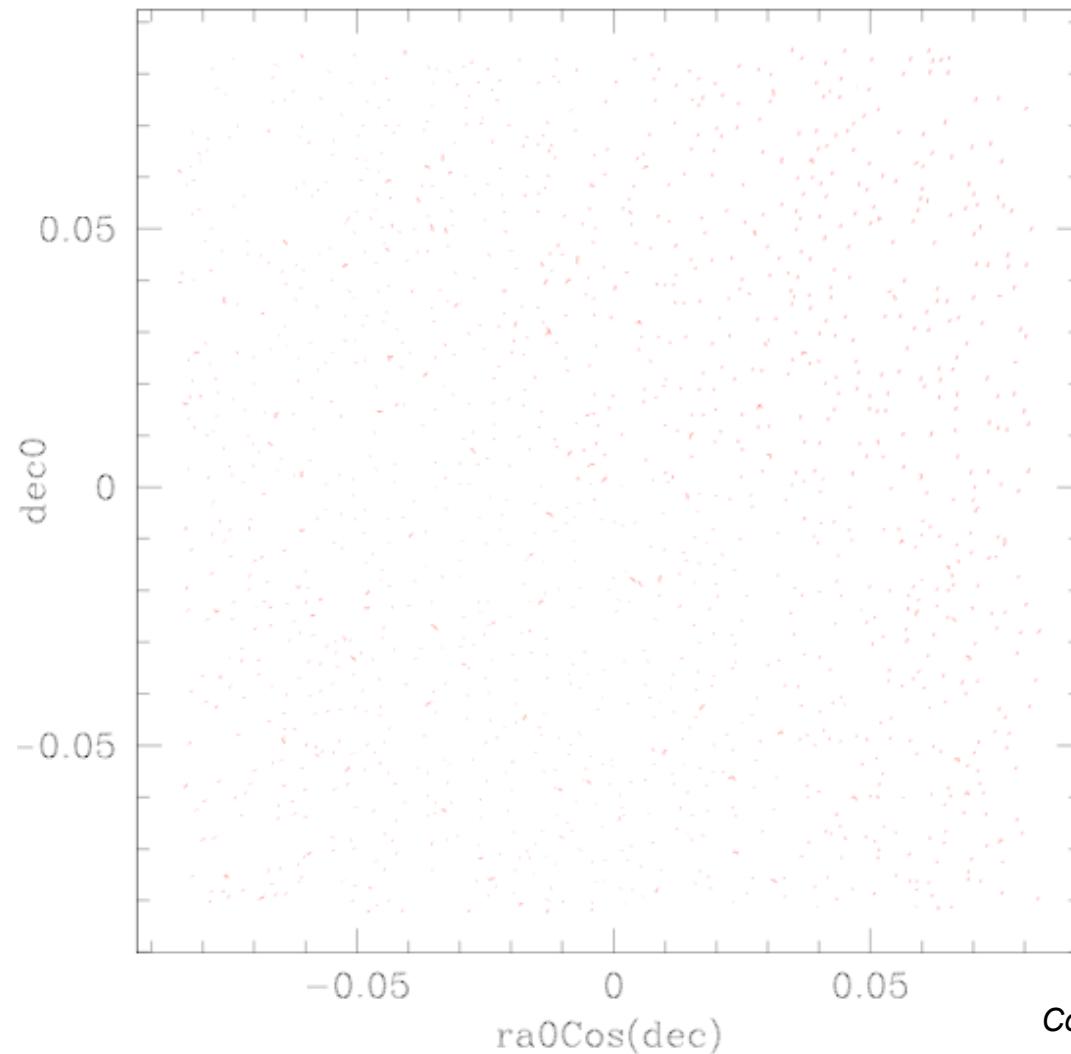




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# Astrometry with DECam Chip

## (Night 4, NGC 5617)



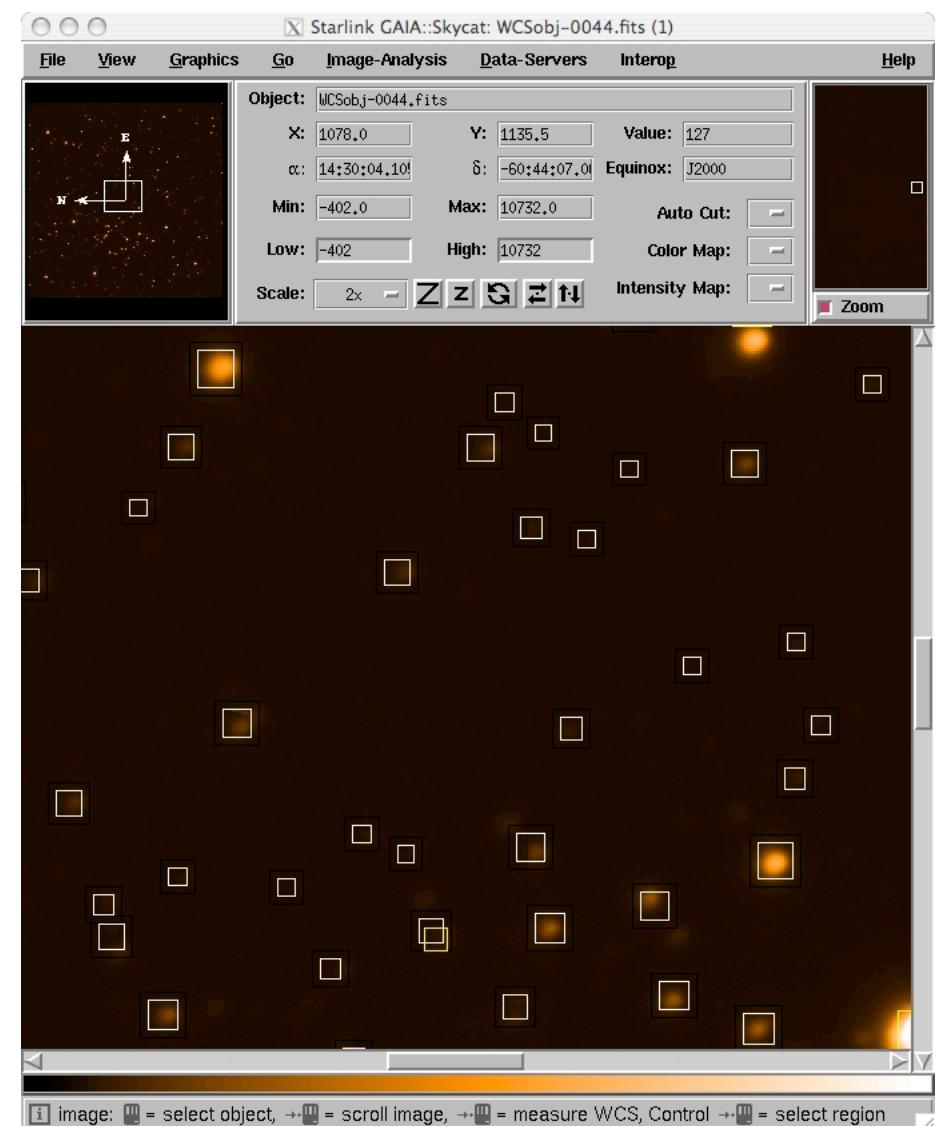
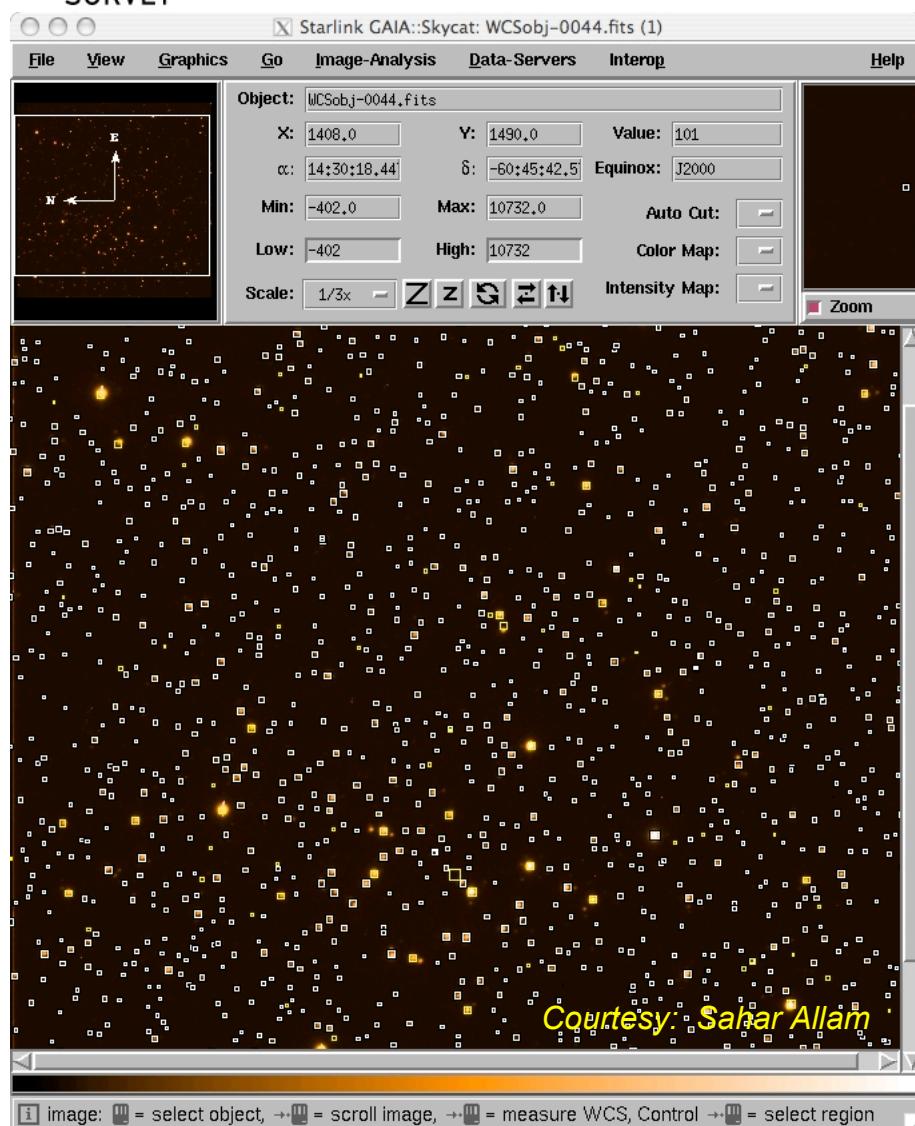
Courtesy: Sahar Allam

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# Astrometry with DECam Chip (Night 4, NGC 5617)

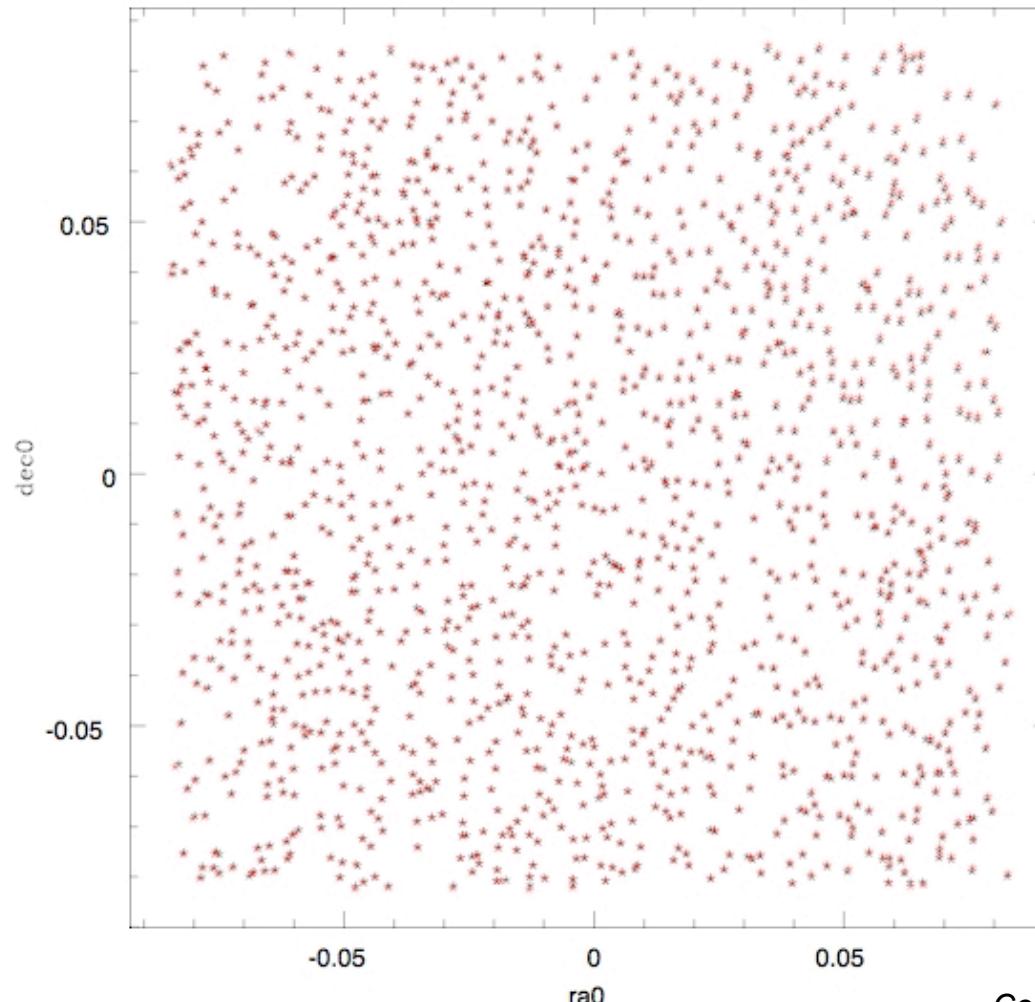




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# Astrometry with DECam Chip

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Courtesy: Sahar Allam

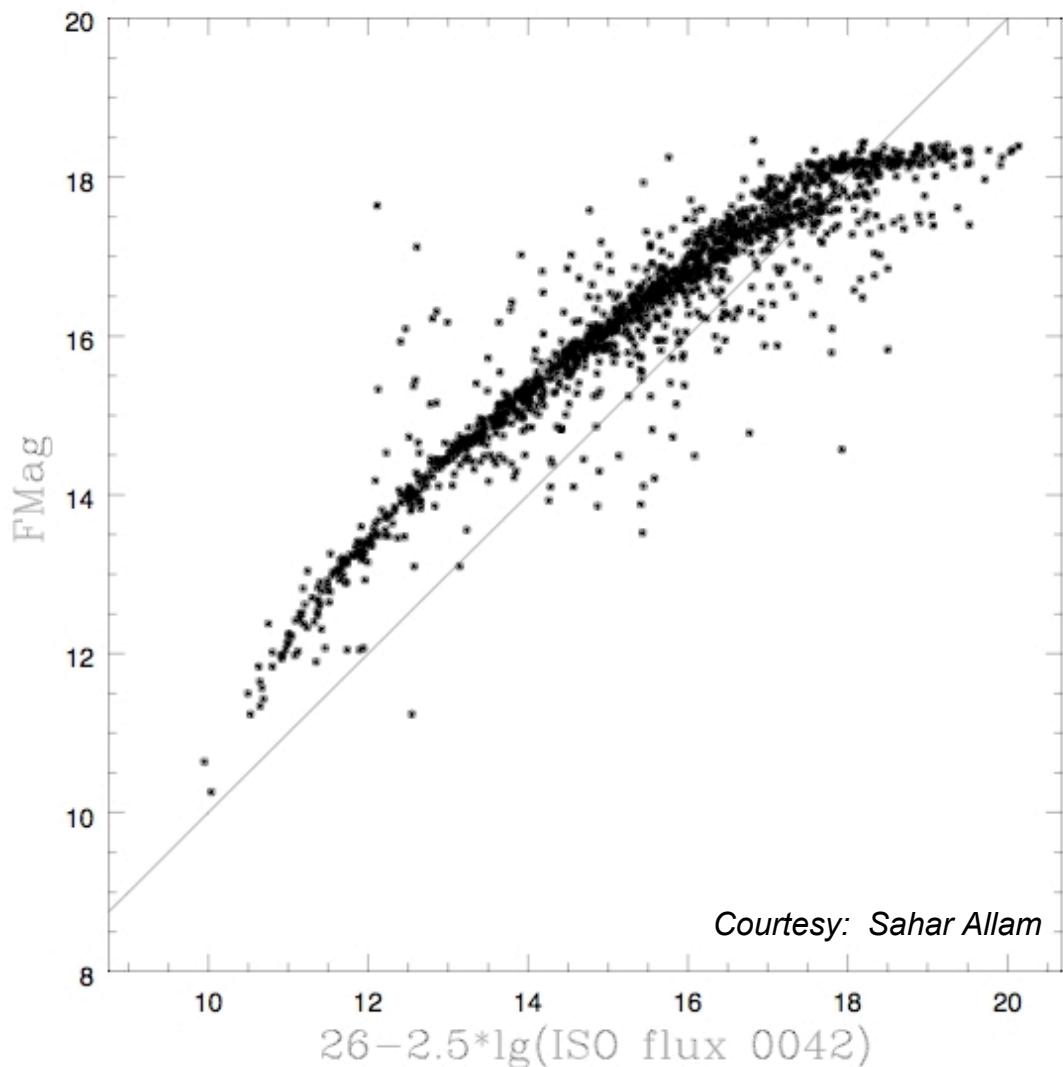
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# Photometry with DECam Chip?

## (Night 4, NGC 5617)



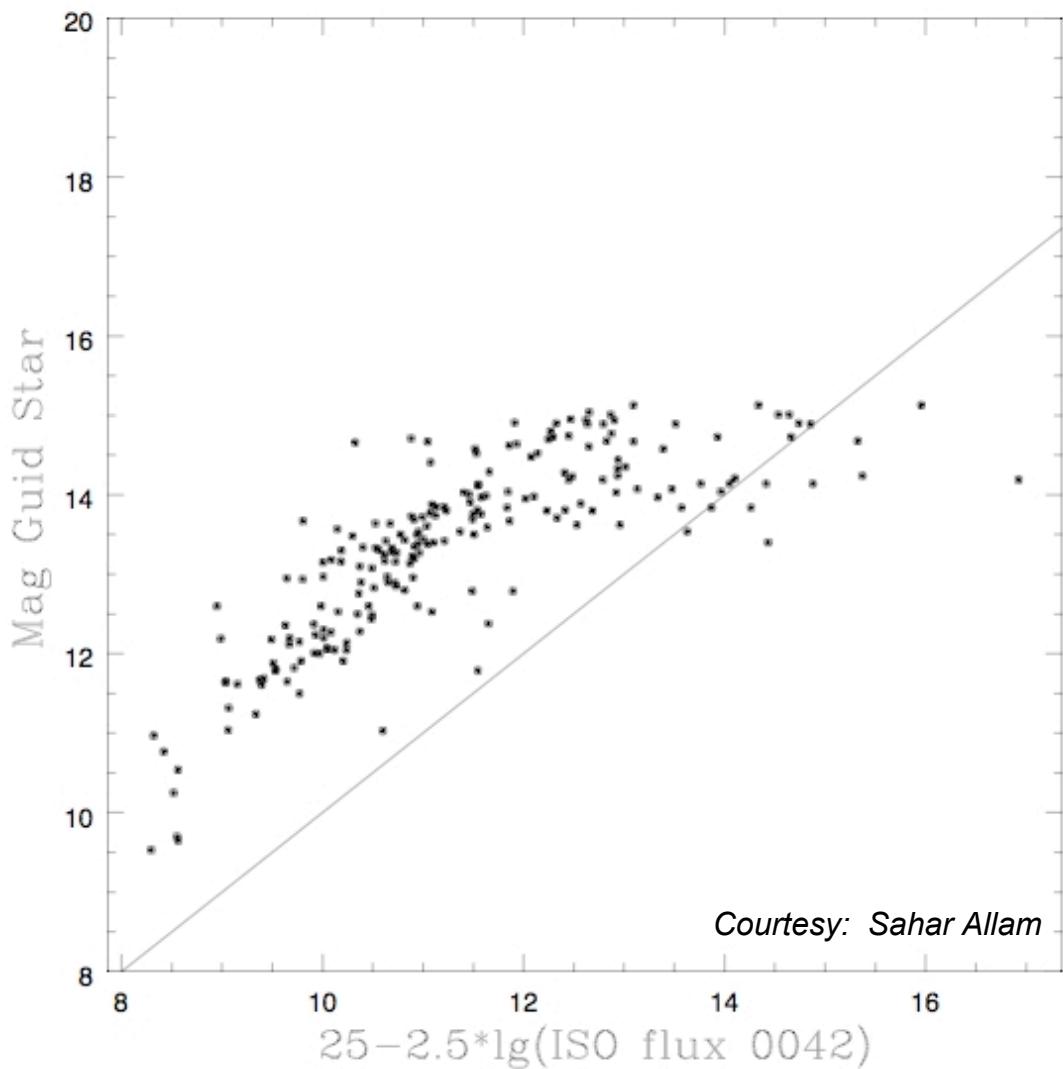
- Problems with the electronics
- E6 standard star field observed on same night yielded bizarre values for system throughput (2%-10%, depending on brightness of standard star)
- Here is a plot of photographic plate  $F$  magnitudes (red) against uncalibrated DECam chip  $r$  band magnitudes for GSC-2 stars within the NGC 5617 field
  - Broadly “OK” (bright stars are bright, faint stars are faint)
  - Slope  $< 1$
  - Generally best not to do photometric calibration with GSC-2 stars, but definitely useful for getting a rough idea of what is going on



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# Photometry with DECam Chip?

## (Night 4, NGC 5617)



- Here is a plot of photographic plate magnitudes against uncalibrated DECam chip  $r$  band magnitudes for GSC-1 stars within the NGC 5617 field
  - Broadly “OK” (bright stars are bright, faint stars are faint)